

Qu. 9. Is not fire a Body heated so hot as to emit Light copiously? For what else is a red hot Iron than fire? And what else is a burning Coal than red hot Wood?

Qu. 10. Is not flame a vapour, fume or exhalation heated red hot, that is, so hot as to shine? For Bodies do not flame without emitting a copious fume, and this fume burns in the flame. The *Ignis Fatuus* is a vapour shining without heat, and is there not the same difference between this vapour and flame, as between rotten Wood shining without heat and burning Coals of fire? In distilling hot Spirits, if the head of the still be taken off, the vapour which ascends out of the Still will take fire at the flame of a Candle, and turn into flame, and the flame will run along the vapour from the Candle to the Still. Some Bodies heated by motion or fermentation, if the heat grow intense fume copiously, and if the heat be great enough the fumes will shine and become flame. Metals in fusion do not flame for want of a copious fume, except Spelter which fumes copiously, and thereby flames. All flaming Bodies, as Oyl, Tallow, Wax, Wood, fossil Coals, Pitch, Sulphur, by flaming waste and vanish into burning smoke, which smoke, if the flame be put out, is very thick and visible, and sometimes smells strongly, but in the flame loses its smell by burning, and according to the nature of the smoke the flame is of several Colours, as that of Sulphur blue, that of Copper opened with Sublimate green, that of Tallow yellow. Smoke passing through flame cannot but grow red hot, and red hot smoke can have no other appearance than that of flame.

Qu. 11.

Qu. 11. Do not great Bodies conserve their heat the longest, their parts heating one another, and may not great dense and fix'd Bodies, when heated beyond a certain degree, emit Light so copiously, as by the emission and reaction of its Light, and the reflexions and refractions of its rays within its pores to grow still hotter, till it comes to a certain period of heat, such as is that of the Sun? And are not the Sun and fix'd Stars great Earths vehemently hot, whose heat is conserved by the greatness of the Bodies, and the mutual action and reaction between them, and the Light which they emit, and whose parts are kept from fuming away, not only by their fixity, but also by the vast weight and density of the Atmospheres incumbent upon them, and very strongly compressing them, and condensing the vapours and exhalations which arise from them?

Qu. 12. Do not the rays of Light in falling upon the bottom of the Eye excite vibrations in the *Tunica retina*? Which vibrations, being propagated along the solid fibres of the optick Nerves into the Brain, cause the sense of seeing. For because dense Bodies conserve their heat a long time, and the densest Bodies conserve their heat the longest, the vibrations of their parts are of a lasting nature, and therefore may be propagated along solid fibres of uniform dense matter to a great distance, for conveying into the Brain the impressions made upon all the Organs of sense. For that motion which can continue long in one and the same part of a Body, can be propagated a long way from one part to another, supposing the Body homogeneous, so that the motion may not be reflected, refracted, interrupted or disordered by any unevenness of the Body.

Qu. 13.